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P R E F A C E.

TH E Society, with great pleasure, observe the regard paid by the Publick to the Volumes of their Transactions already published. The first, printed in the year 1783, is now out of print ; and very many of the Volume printed in 1784, are already sold ; for as members on their election are entitled only to the volume printed in that year in which they are elected, almost the whole of those chosen since 1783, have purchased the preceding books : and the great encrease of members since the Society thought proper to print their Transactions, may be with justice attributed to the circumstance of publishing these Volumes.

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By publications of this kind, knowledge in Agriculture and the various branches in different Arts is disseminated; and whoever views the present state of these Kingdoms, and compares the appearance of the several Counties with what it was thirty years ago, will have reason to rejoice at the improvement made within that time, not only in Agriculture, but in those Mechanical and Chemical Arts by which the Trade and Commerce of the Kingdom is and must be supported against any rivals who may endeavour to supplant it.

To this kind of knowledge, added to a good taste spread among Artists by the premiums distributed for their encouragement, and among the Nobility and Gentry by the honorary marks of distinguishing approbation, the Society have conferred on their performances, is in a very great degree owing the elegance found in
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the ornamental parts of furniture, carriages, &c. And here must not be omitted the advantages the Commerce of this Country has received from the exportation in very great quantities of the Engravings and Mezzotinto Prints, executed by our artists, which are now in high estimation even in those Countries that formerly supplied all Europe,

In the Mechanical Arts, this Country stands high in repute; and at the same time that it must be acknowledged a singular honour that one of our Artists has been employed to furnish to France, the largest and most useful apparatus modern times can boast of; it must be also allowed, that that Kingdom has shewn great liberality by employing a native of any other country than their own to execute it.

The subject here alluded to is the mode lately adopted at Paris of supplying

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ing that City with Water by means of Steam Engines and cast Iron Pipes; all which have been furnished from England.

The great exportation also of Clocks and other smaller machines to Turkey and the East Indies, and even to Germany, may serve as a further and convincing proof how necessary it is to encourage that attention to Mechanicks, which is so general in this Contry, and which fortunately for us is found to be daily encreasing.

The following Papers are, as in the former Volumes, divided into separate heads, and arranged under those classes into which the premiums offered by the Society have constantly been divided.

In the class of Agriculture, are inserted papers which it is believed may throw some light on that important and much controverted subject in Agriculture,
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the comparative advantage of the Drill and Broad-cast Husbandry.

An account is also given of the culture by different persons of a large kind of Hemp from China ; and as some more of the seed has been received from the honourable East-India Company, and properly distributed, further experiments on that Plant may be expected to make part of a subsequent Volume.

The advantages which these Islands must reap from the gaining and securing Land from the Sea, are obviously many and important ; and in consequence of a premium offered, the Society have received a satisfactory account of a considerable quantity of land thus gained, which, it is hoped, will prove very acceptable to every reader.

Some further observations are here inserted relative to the culture of the Tur-

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nep-rooted Cabbage, a plant first introduced to the Publick by the late Mr. Reynolds of Addisbam in Kent, under the encouragement of the Society, and now coming into general use for the material purpose of spring food for cattle; and as by a letter inserted in this Volume it is clearly proved that the severe frosts of the most northern parts of the Island of Great Britain, are not injurious to this vegetable, it is easy to foresee the great advantages that will accrue to the inhabitants of that part of the island from the cultivation of it.

Under the head of Chemistry is inserted an Essay on Portable Furnaces, giving a short account of the original contrivance, and a cursory detail of the several Kinds hitherto most in use, at the same time pointing out a cheap and easy mode of making them more commodious in their construction and use.

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This, it is hoped, will induce gentlemen of fortune and leisure, to attend to experiments in the Chemical line, which, at the same time that they supply an inexhaustible fund of amusement, are constantly furnishing matter for the employment of the industrious, by establishing new Manufactures, and thereby varying and encreasing the Commerce of the Kingdom.

In the class of Polite Arts, it has been thought fit to publish an account of the curious invention of a blind young man, contrived by him for the purpose of performing the various Rules of Arithmetic. Every humane mind will rejoice to find a method discovered for the entertainment and employment of those who labour under the dire misfortune of want of sight; and when we observe how many persons in that unhappy predicament have succeeded in their application
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to musical studies, there is reason to hope arithmetical pursuits, which are in many instances nearly allied to them, may reap some considerable advantages from this invention.

An endeavour to propagate the Silkworm, and institute a manufactory of Silk in this Kingdom, has long been an object of the wishes, not only of this Society, but of Government itself; as fully appears by the curious and learned paper of the Honourable Daines Barrington, inserted in the second volume of these Transactions, page 172; where it appears that attempts to introduce that business into this Country, were made so long since as the reign of James the First.

In the second volume were published several Letters from Mrs. Williams of Gravesend, on that subject; and under the class of Manufactures in this Volume,

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lume, will be found two Letters from a young lady, who, with an attention and assiduity that deserve the highest commendation, has applied herself to the making such experiments as seem likely to ascertain with precision that question so long and so often agitated, whether the production of Silk in this Climate can ever be brought to such perfection, and carried on upon such a scale, as to render it an object of public utility. Whatever hereafter Miss Rhodes shall communicate on that head, shall make a part of the future volumes of these transactions.

Under the head of Mechanicks, the reader will find a description and plate of a Chime-Clock on a more simple and less expensive plan than those generally made ; and when the number of Clocks that make an article of trade to the East Indies and the Levant is considered,

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sidered, any improvement in their construction must be deemed worthy the public attention. Under this class also are inserted two letters shewing the advantage (and pointing out proper methods) of securing Ricks of hay and corn, during the making: the utility of such contrivances are so evident, that it is surprising the use of them has not long since been universally adopted. Here too will be found an history of the invention and an account of the construction of an artificial Horizon to be used on land. When it is considered how few of the inventors of useful Machines are now known even by name, it may serve as an additional inducement to ingenious persons to communicate their inventions to the Society; as future ages will be able, by their names being thereby properly recorded, to bestow on them those praises their labours are entitled to.

In

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In the class of Colonies and Trade, will be found some letters from Barbados and Nevis, giving an historical account of the introduction of that useful and much-esteemed fruit, the Mango Plumb, into those and other of the West-India islands, which, when the many uses that species of fruit is applied to, and the high estimation it is held in the East Indies, is considered, may be reckoned a very valuable acquisition: yet this circumstance will seem much lessened in its consequence, on the publick being informed with a due degree of authority that not only the Cinnamon-Tree, as will appear by the letter from Mr. Wilfon, but a great number of other valuable Plants, the natives of the Spice Islands in the East, are happily planted and growing in a luxuriant state in Jamaica, owing to the care and attention of Lord Rodney, who, during his ever-memorable
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and successful cruize in the West Indies in the course of the late war, ordered a ship which the French had purposely sent from the Isle of Bourbon to Martinique, with those plants on board, but which was fortunately taken by one of his Lordship's cruisers, to be immediately sent to Jamaica, and the plants placed under the care of a proper gardener. Thus that Island is become possessed of what there is reason to believe will one day prove a source of wealth to that Colony and to the Mother Country.

A list of the contributing Members is this year inserted at large; and among the premiums offered to the Publick, will be found several that have not appeared before, two of which it may not be improper to speak of in this place; that offered for a Dissertation on the nature and properties of Alkaline Salts,
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and that on making Paper from Raw Vegetables. From the improved state of Chemistry in this Country, the nature of the Alkaline Salts made use of in many Manufactures have become objects of consideration among the workmen ; and it is now known to them, that, from the different properties of the two kinds of those salts known by the names of vegetable and mineral Alkali, or more usually Pearl Ash and Barilla, very essential differences take place in their works, even when the substances are unadulterated : but the sophistications to which they are liable, are so many and so various, that it has been with great truth supposed an easy method of purifying and separating them from all heterogeneous matters, and discovering their inherent and essential differences, would be of very great service ; and for that purpose a considerable premium will be found offered at

Class

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Class 109. Another new object of Reward is in the class of Manufactures, No. 155, where a premium is offered for manufacturing paper from vegetable substances not previously made into cloth. The very great consumption of paper, of all kinds, in these Kingdoms, and the circumstance of an edict, some time since published in one of the foreign Countries, prohibiting the exportation of linen rags, rendered it necessary to consider whether any method could be adopted to establish a Paper Manufactory on a principle different from the common one: and fortunately the Society had some years since received from one of their corresponding members (Mr. Jacob Christian Schaffers, of Regensburg) a considerable number of specimens of papers made of Raw Vegetables, which appeared of such qualities as to furnish hints for introducing a new mode of making so useful

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useful an article as paper ; and hence has arisen the idea of offering a premium on this subject.

It is hoped the several essays in the following sheets will serve to point out the utility of these publications, and be the means of inducing persons of talents to communicate to the world, in the future volumes of these Transactions, such observations as they may make respecting the improvements of the Arts, the Manufactures and Commerce of these Kingdoms, which are the immediate subjects of the Society's consideration, and which cannot fail to reflect honour upon those who attend to the advancement of objects of so great importance.

The print which is affixed as a frontispice to this volume, is an exact portrait of the founder of this Society ; the
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picture from which this print is taken, was painted from the life by Mr. Wm. Hincks, who also engraved the copper-plate, and presented them both to the Society, for the purpose of perpetuating the memory, and recording the likeness of Mr. WILLIAM SHIPLEY.



W. Hinks fecit.

MR. W^M SHIPLEY,
whose Public Spirit gave rise to the
Society Instituted at London,
for the
Encouragement of Arts, Manufactures
and Commerce.